

# BOSTON MEDICAL AND SURGICAL JOURNAL.

VOL. XXX. WEDNESDAY, APRIL 17, 1889. No. 10.

SARATOGA WATERS.—NO. II.

To the Editor of the Boston Medical and Surgical Journal.

DEAR SIR,—The subject to which I wish to call the attention of your readers on the present occasion, is the MEDICINAL CHARACTER of the waters of Saratoga Springs.

By many practitioners these are considered as nothing more nor less than an agreeable and generous laxative, and beneficial in cases of constipation, bilious derangements, dyspepsia, &c. But that there are other qualities that simultaneously co-operate with the aperient effect of the remedy, and are inseparably connected with it, is established beyond all doubt, and should be known by our profession generally, who are in the habit of sending patients to this village.

There are two methods of testing the nature of an agent that is to be introduced into the materia medica; viz., by carefully watching and recording the *therapeutical effects* of the article by the bedside, and by *chemical analysis*. The latter criterion is good as far as it goes. If sulphur be the only or principal ingredient in a mineral spring, we can bring analogy to decide, *a priori*, what must be the tendency and effects of the water. The same is true of a specimen that is principally saline, or principally chalybeate. We can feel, too, a considerable degree of confidence when two or more constituents are found in combination, provided we are acquainted with the *modus operandi* of these substances when administered by themselves. But every medical man knows these are limits to this mode of reasoning. How often has the practitioner been surprised at the augmented, diminished, or less irritating effects of some off-hand combination, that would be wholly unlooked for by estimating the separate agency of each article.

So of mineral waters. Chemical analysis can soon decide the true medicinal nature of a new spring, independently of clinical observation. There are three reasons for this. 1st. Many medicines, such as oxide of iron, carbonate of iron, pulverized cinchona, calomel, the extracts, the gum-resins when given in pills, capsicum, ginger, &c. pass through the alimentary passages with very little diminution from absorption. Mineral waters, on the contrary, as may be inferred from Dr. Beaumont's experiments, are introduced into the mass of blood by the absorbents of the stomach, without any previous deposition or digestion, and thus these mineral agents, which, in their minute proportions, would be very inert in a state of powder, are admitted to the intimate contact of all



the bloodvessels, and to the minutest branches of the secretory apparatus. How widely different these two modes of operation must be, all can readily understand. 2d. Chemical analysis cannot appreciate the mutual or qualifying effects of the ingredients on each other, as above stated. 3d. In the language of Dr. James Johnson, of London (*Economy of Health*, p. 224), "Mineral waters contain, in all probability, many agents which we cannot imitate by artificial combinations. This is proved by every day's observation. Thus, the saline, aperient, mineral waters, will produce ten times more effect than the identical materials artificially dissolved and mixed. The same is true with respect to the chalybeate springs. A grain of iron in them is more tonic than twenty grains exhibited according to the pharmacopœia." At page 215—"It does not follow, however, that waters contain no active materials, because chemistry is unable to detect them. Powerful agents may be diffused in waters which are incapable of analysis, or destructible by the process employed for that purpose. The only sure test is EXPERIENCE of their effect on the human body."

With these qualifying remarks on the proper estimate to be put on chemical analysis, I proceed to lay before your readers the composition of some of our principal springs; and, 1st, the *Old Congress Spring*, which is in the south part of the village, just east of Broadway. In our wine gallon, or 231 cubic inches, there are of—

Chloride of sodium (table salt), 385 grains,	Silex, 1.5,
Hydriodate of soda, 3.5,	Hydrobromate of potass, a trace,
Bicarbonate of soda, 8.982,	Solid contents, 597.963 grains,
Bicarbonate of magnesia, 95.788,	Carbonic acid gas, 311 inches,
Carbonate of lime, 98.098,	Atmospheric air, 7,
Carbonate of iron, 5.075,	Gaseous contents, 318 cubic inches.

The analysis of *Putnam's New Congress Spring*, some 40 rods north of the old Congress, and on the east of Broadway, has never, to my knowledge, been completed. It is a finely flavored water, and has many properties similar to those of the Old Congress. This spring alone would do much towards continuing the present immense resort to this village.

Besides these, there is a spring on the premises of Judge Walton, in the north part of the village, which has lately been newly dug and newly curbed, by which processes the fresh water has been effectually shut off from the mineral, and it is now considered both by villagers and strangers as a new fountain. It is, indeed, a beautiful water. Possessing the general properties of the other springs already mentioned, it seems to have two peculiarities, viz., the abundance and fixedness of its carbonic acid gas, and its containing only 1-4 or 1-5 the amount of iron there is in the Old Congress. Numerous globules of the gas are seen from a distance floating in the water, and every few seconds explosions of very large bubbles occur at the surface. It bids fair to be an excellent article for bottling, and it has fallen into the hands of gentlemen who, I believe, design to give it circulation. The results of an



analysis which are now before me, and which was made the past winter in Albany by Professor Emmons, I would insert, but the proprietors will probably have the process repeated before giving it to the public.

This fountain has attracted great notice during the winter, and has been proved by numbers to possess the usual aperient and diuretic qualities of the other springs above mentioned. Its re-construction, it is believed, will add greatly to the medicinal resources and permanent prosperity of the village. I need not stay to particularize the other springs, as the above receive the principal attention from visitants. The chalybeate springs, of which there are several, are more tonic and less aperient than those already described.

The length to which I have extended this paper forbids my enlarging. The above statements would show that these waters are thoroughly aperient, diuretic and deobstruent. They are also decidedly tonic. This fact is fully confirmed by clinical observation. The late Dr. Steel, and all who have practised in this vicinity, as far as my knowledge extends, have found the same tonic effects to accompany the use of the waters. And it is remarkable that this is found to be the case with all the mineral waters of Europe that are not simply sulphureous. The Buxton waters in England, which contain only 15 grains of saline matter in a gallon, and 6 inches of gaseous products, have been found, from a record of 14,906 patients, to be highly stimulating and tonic. The bracing effects of the waters have proved a source of constant embarrassment to Dr. Robertson, of the place, and required continual counteraction. The same report comes from numerous other fountains in Europe; and confirms me in the position that the springs of Saratoga are not only diuretic, aperient and deobstruent, but tonic.

Respectfully yours,

Saratoga Springs, April 3, 1839.

M. L. NORTH.

#### AMERICAN DENTISTRY.

*To the Editor of the Boston Medical and Surgical Journal.*

DEAR SIR,—In a late number of your valuable Journal my attention was called to a severe attack made upon me by Dr. F., of Boston. The matter contained in it is such as scarce demands a moment's notice, so evident a design is shown on the part of its author to misconstrue and impute to me the worst of motives, in giving publicity to a letter and introducing remarks which seem to have had the magical effect of arousing the gentleman's ire. At first sight I had concluded to give it no further notice than was exacted in patiently reading it, so evident was it that some motive deeper than the Quixotic spirit of acting the champion of what he considers the injured innocence of the American dentist, had instigated him to the unprovoked attack upon a "young foreigner." But as the matter in question has attracted the attention of the numerous and respectable readers of your Journal, from having found a place in its pages, I feel that it is no longer a matter of choice with me, but that my duty to my numerous and respected friends of the medical faculty in this country, demand from me that I should state not only the cause



that led to the publishing of the communication from Mr. Nasmyth, to which Dr. F. has taken so many and such ill-founded exceptions, but likewise correct, for their benefit and my own exculpation, the mistakes of Dr. F. relative to my note accompanying the letter in question. And now, first, for the motives which led to its publication.

You will recollect, Mr. Editor, that soon after receiving Mr. Nasmyth's letter, I was reading some parts which I considered of interest to yourself, when you requested it of me for publication. I objected, and gave, as my reasons, that it was not written by the author with the intention of ever being given to the public; at the same time remarking, as a further objection, that it contained matter which was in itself of a private nature. This, you will recollect, was overruled by yourself, as you remarked that you were anxious to give it to your readers, as it contained valuable information regarding the state of dentistry in Europe. I then consented, with the proviso that you would allow me to strike out such parts as I considered objectionable. Accordingly it was soon after published, with the addition of a few explanatory lines by me. I there, unfortunately, gave utterance to that unhappy expression which the vivid imagination of Dr. F. has tortured into a pointed insinuation. If I have been guilty of a most heinous offence in innocently saying that some dentists withhold the most important discoveries from the profession, it consists merely in conveying the correct idea that a man's reasons for his own actions are better known to himself than to others; but I would here utterly disclaim any insinuation, any sinister motive, concealed under the offensive expression which has proved so fertile a subject for invective to Dr. F. Mr. Editor, I have now given you, in a few words, a correct, certainly, if not a satisfactory, explanation of the introductory note that has subjected me to such harsh, and, I must say, ungentlemanly treatment from Dr. F. I will now ask your patience for a few moments while I reply specially to some statements in Dr. F.'s article, which, if not exactly incorrect, vary so widely from actual facts in my possession, that I feel called upon to lay them before your readers, that they may give their decision upon them. For however pleasant and generous an amusement it may be to Dr. F. to malign a young practitioner, or foreigner, if he pleases, I feel it no less a duty on my part to sustain myself, so long as I can do it without resorting to direct vituperation, as the gentleman has done.

May I inquire of the gentleman, if, when he refers to "those regularly bred to the profession," he is to be understood as alluding to those dentists who are members of the Massachusetts Medical Society. If so, the gentleman must be aware that members of this Society are bound to communicate all discoveries or modes of treatment that they may deem new or of importance to the profession. Again, Dr. F. knows, as well, if not better, than myself, that several members of this Society compel their students not only to pay \$500 and upwards, but likewise either to give bonds, or their word of honor, not to divulge to or teach others what they consider the *secrets* of the profession, before forcing them to submit to the same terms. Those practitioners who happened to be members of the aforesaid Society before the passage of



the by-law which makes it necessary for dentists to become members of the Society to qualify them to practise, may consider themselves as under no obligation to apply the law to themselves; but surely the gentleman who first proposed the law, and exerted himself to the utmost regarding it, should show us the example by strictly adhering to the laws of the Society of which he would force all others to become members. Dr. F.'s mind seems to admit the truth of this position, when he says, in a semi-apologetic tone, that, although each little improvement in the treatment of diseases of the teeth, &c. is not published in periodicals until it has been fairly tested, still they will all appear in due time, either in this or in another form. What Dr. F. calls due time I do not pretend to know, but I will give the public the same facilities for judgment on these points that I have; for instance, Dr. F., in a note to a little work which he published *eleven years ago*, stated that he had then lying by him the manuscript of a systematic work, nearly ready for publication, but in order to obtain some European works which are not to be had in this country, and to avail himself of some other advantages for completing the work, its publication had been deferred longer than was first intended. This work, Mr. Editor (which, no doubt, contains all the improvements both in this country and in Europe, in the treatment of the diseases of the teeth, &c.), has, if I mistake not, never yet been given to the world. Again, Dr. F. says, that "they [i. e. those regularly bred] do not choose to spread abroad their modes of practice in the columns of a newspaper, for the convenience of those who are picking up the means of practising dentistry at some rate or other." Although I would condemn, as soon as Dr. F., the mal-practice and quackery which prevail in such a degree in our profession, both in this country and abroad, yet I would ask, if true knowledge in dentistry (without reference to the manner in which it is imparted) would be likely to do more harm, in proportion, than is every day effected by noticing in journals and other publications the most advantageous modes of medical treatment.

I would again advance the fact regarding the late Dr. Hudson, of Philadelphia, and I will call your attention to the written opinions of two eminent American dentists, to corroborate my statement. E. Parmley, in a note to *Dentologie*, says, "We have cause also to regret that the late Dr. Hudson, of Philadelphia, did not, during his lifetime, embody his professional principles for the benefit of his cotemporaries, and those who shall succeed him in dental operations. I may say, *without fear of contradiction*, that he has left behind him no one in this country so able to instruct, and so well qualified, from observation and experience, to be useful to the student." Dr. Fitch, "author of the most comprehensive work on the teeth ever published in this country," thus expresses himself regarding Dr. H. "Those only who have carefully attended to the subject, can have any adequate idea of the benefit the labors of Dr. Hudson have conferred, not only upon the people of this city, but of every part of the United States. When he commenced his practice here, he found the profession generally at a very low state, usually exercised by mechanics. Those great principles which elevate dental surgery from an art to a science, were almost entirely overlooked



or unknown. To remove this mass of rubbish, to obliterate bitter and widely extended prejudices, was the task of Dr. Hudson. How well he performed his duty, can only be estimated by a reference to the state of the profession at the time he commenced his practice, and when he was taken from it by the hand of death. Previously to his time, nearly all the talent among the dentists of this country was directed to the making and inserting of artificial teeth. Dr. Hudson taught the possibility and the immense advantage of preserving the living teeth, instead of suffering their loss and resorting to artificial ones. He taught that by strictly attending to the dentition of children, all the irregularities and deformity of the teeth might be prevented, and that by continuing our attentions and performing timely operations upon any of those which might become defective, those useful organs may be preserved in perfection during our whole lives. Founded upon these principles, and recommended by his admirable operations, the practice of Dr. Hudson soon became the praise and admiration of all who witnessed or experienced its beneficial effects. His name was soon placed as first amongst all those who practised dentistry in this country. This reputation he always retained. For a great many years, to equal his operations has been the highest ambition of other practitioners; none expected to excel them."

Fully aware of the great and well-merited reputation of the senior Dr. Flagg, I would take this opportunity of stating one particular instance which came under my own immediate observation, and which shows, in a remarkable degree, the efficacy of filling, when skilfully performed. I was consulted, some two years since, by a gentleman who had employed Dr. F., senior. On examining his teeth, I found two cavities filled with gold. Their appearance was such as would indicate, to a casual observer, that the operation had been but recently performed, but the gentleman assured me that they had been filled by Dr. F., senior, 33 years since; and I believe no dentist of the present day, notwithstanding the advantages that we may now possess over our predecessors, could have improved the filling, even after the lapse of so many years. At that time Dr. F., senior was the principal, and, I may say, almost the only dentist in Boston; and from my own grandfather, Dr. Spence, having been the only dentist of note in Philadelphia, at the same time, I feel myself more identified with the dentists of this country than those of any other, although guilty of being a foreigner by birth. I would also pay Dr. J. F. F. a just tribute, in stating my conviction that he has done much to raise the profession to its present stand in Boston, and to him we are indebted for many valuable improvements in our art; but I must likewise state it, as my opinion, that science would make but slow progress if every individual who wished to acquire each new improvement was bound to pay not only a large sum, but likewise prevented from divulging it to others without exacting the same terms. Whatever additional knowledge I have been able to obtain in this country, either in the filling of cavities, or in the manufacturing of porcelain teeth, I have paid for it; and whatever *confidence* may have been placed in me by the Boston dentists, there is not one who can say that he has communicated to me any of their peculiar methods of operating. 12106



It is with feelings of the utmost delicacy, Mr. Editor, that I can ever defend myself from an attack on my private motives of action in a public journal—feeling, as I do, that your readers cannot be interested in the personal quarrels of individuals. You can, then, judge of my surprise, in not only witnessing Dr. F.'s making your Journal the medium of personal invective, but of stooping to such petty weapons of warfare as to presume to judge of my humble plans, without ever having had the means of ascertaining what they are. He states that I have been made to believe that the great secret and excellence in filling teeth consists more in the particular mode in which pieces of gold are placed in them, than in the knowledge and experience of the operator; and that to explain the whole secret, I send a tooth filled in a vice, by a *Hudson operator*, to illustrate the different steps of an important and often difficult operation. Now he has drawn what he considers a powerful simile, in comparing my illustration to sending an amputated limb from the Massachusetts General Hospital, to St. Thomas's, London, as an evidence of the skill with which amputation was performed in this country. That it presents itself in this light to the gentleman's intellect, I have no hesitation in believing, and cannot but congratulate myself that the intellect of others is not of this peculiar cast. I give you the case, Mr. Editor, that I may have the benefit of your judgment upon it; if it, together with that of your readers, coincides with the gentleman's, I will then submit. I selected several teeth, and excavated them as I have been taught to believe in the most approved manner; for instance, I made the opening as large as any part of the interior, and the sides perpendicular to the bottom of the cavity, instead of making the opening smaller, as was formerly practised. I then rolled some gold foil into little cylinders, of various sizes and lengths. I took one of these teeth, and placed in it as many of the above-mentioned cylinders as it could contain loosely, without altering their form in the least, simply to show their relative position to each other and the cavity. I gave full explanations regarding the necessity of applying pressure between the cylinders, and in proportion as room is made between them, to add more of requisite size, until the cavity is wholly filled, giving, at the same time, a detailed description of the whole process, and the manner of obviating certain difficulties, such as the flow of saliva, &c. I sent a quantity of gold foil made by Marcus Bull, who is, by the way, an American, and makes superior gold to any, either in this country or Europe, of the requisite thickness to show the contrast between it and that now used in Europe. As I before mentioned, I requested a gentleman, well known for his superior operations, *although he may be a follower of Hudson*, to fill a tooth, which I sent with a number of other specimens. I obtained from Mr. Johnston correct drawings of the instruments requisite. I called Mr. Nasmyth's attention to the advantages of making the healthy walls of the cavity hold the gold, instead of trusting to the shelving edges of the orifice, as has been the general dependence of most dentists. I also suggested to him the advantages of making use of India rubber between the front teeth to separate them, instead of resorting to the use of the file; and also to the efficacy of tying saddler's silk around



the necks of some teeth, to prevent the bleeding of the gum during the operation. Sir, do you appreciate the justness of the gentleman's simile?

I must again advert to Dr. F.'s incorrectness, to use the mildest term, regarding the new instrument mentioned in a former number of your Journal. This instrument does not happen to be that to which Mr. N. alludes, but one which Mr. G. Combe brought to me from England, the invention of Mr. W. Robertson, a distinguished dentist in Birmingham. It consists of two parts, which move on a hinge, in the same plane, but of course in opposite directions. To the extremity of the one is a fixed fulcrum, and to the end of the other is a *fixed* claw, in all cases opposite to the same point of the opposing fulcrum. From this construction of the instrument, it will be evident that no difficulty can ever arise from any difference in the size of the tooth to be extracted, while, at the same time, from the circumstance of the operator having the power of regulating the exact degree of force with which the claw shall be held against the tooth, it is also evident that the instrument can be used as a pair of forceps, and consequently is applicable to all cases, whether the tooth be only slightly carious, or so much decayed as to be on a level with the gums or alveolar process. This instrument you noticed in a previous number of your Journal, as having been made and invented in Edinburgh, instead of Birmingham; and as I showed a little key, which Mr. Nasmyth sent me, to Dr. Martin, and which was invented by him, Dr. F. concluded that I wished to pass that off as a new invention, and put a notice to that effect in your Journal. I would further say that I had no idea of your mentioning it, until I saw the notice myself, and observed the error. I also agree with Dr. F. in considering his own forceps superior to any other instruments now in use.

Dr. F. presumes that I sent teeth made by other dentists to Mr. Nasmyth, and passed them off as my own manufacture. But had Dr. F. read my letter, as most of your readers might justly suppose he had, from his bold assertions regarding its contents, he would have found that I gave credit to each person for the particular specimens that I sent. And I would further add, that Dr. F. and myself received instruction in manufacturing what he considers superior teeth to any in Europe, from the same individual, who, I regret to say, is *unhappily an Englishman*, as well as myself.

As I have not an opportunity of referring to Dr. F.'s communication, I must necessarily omit much that I would wish to say explanatory of his unprovoked attack upon me; and I must say that I regret that the attack was made by a man who has sustained, deservedly, such a high stand both as an operator and a gentleman, as it convinces me that a gentleman can be guilty of ungentlemanly conduct. Yours, &c.

Cincinnati, Ohio, Feb. 27, 1839.

HENRY A. DEWAR.



## THE EYE.

BY WILLIAM CLAY WALLACE, M.D., NEW YORK.

No person of ordinary intelligence would, on the inspection of a steam engine, acknowledge that the parts of a machine of such power, and indicating so much thought and design, could, by natural causes alone, assume their form, and be placed in situations proper for the purpose for which they were intended. It is clear that without the smelter the ore might have remained in the mine forever, and that without the mechanic the metal, when formed, would never have been a steam engine.

It is proved by geologists that the earth we inhabit was at one time a melted mass, of such a temperature that no living thing, as at present organized, could then exist; there was, consequently, a period when the machinery of animated beings was formed and put together, and when all the contrivances we witness were planned and executed. There were no gradual advances to perfection; every organized being was at once adapted to the element in which it was destined to live. From the examination of the remains of animals, we find that their organs were as perfect thousands of years ago as they are now, whereas the master-pieces of human contrivance are daily undergoing improvement. In the construction of living creatures there is no room for improvement—there is no science, nor art, of which advantage is not taken; for when we discover a new principle, or application of a principle, we find, on an appeal to nature, that it has been known and acted upon long before. As an example:—The eye of the halibut is directed upward, and the animal could only see in that direction if there was not a provision for turning it forward. Below the eye-socket, and communicating with it by an opening, there is a cavity containing water, which may be forced into the socket, and be squeezed back again when required. The skin is firmly fixed before, while it is loose behind, and permits the organ to be turned round and elevated, so that the animal can see straight forward when the water is forced into the socket. To protect the nerve of vision from injury arising from the changes of temperature thus produced, a thick coating of jelly, a bad conductor of heat, is placed between the fluid and the nerve. The want of mobility in the neck is thus supplied by means quite as efficient, and which man, with all his ingenuity, did not discover or apply to a practical purpose for more than 5000 years.

The socket of the turtle contains cavities into which air may be forced and the eye be blown out, while numerous intersecting bands limit the extent of protrusion and keep it from bursting. By squeezing out the air, the eye may be sunk so far that there is no danger of its being injured by striking against the shell, when the head is drawn rapidly back.

It is difficult to perceive how these objects could be accomplished in any other way than above stated. If the eye were pushed out by the direct application of muscular power, the muscles for the purpose would occupy so much of the socket that there would be no room for those which move the eye in different directions. Although ~~discovered~~



vaunted as a modern discovery, the principle of the hydrostatic press was understood and practically applied long before the time of Bramah.

When a magnifying glass is fitted into a hole in the window-shutter of a dark room, and the light which is admitted is received upon a sheet of white paper held at a certain distance, a beautiful but inverted picture of everything before the glass is formed on the paper. The representation of the scene without is so true to nature that artists sometimes avail themselves of this method to make a correct landscape. The things essential to this experiment are: 1, a convex glass to collect the light from surrounding objects; 2, an opaque or semi-opaque substance placed at the focus to intercept the light and make the image visible; and 3, a covering to keep the parts in situation. The eye is just such an instrument, consisting of all these parts, besides others which cannot even be imitated, and it is constructed with such exquisite workmanship that even the microscope cannot exhibit the minuteness of its structure.

The magnifiers of the eye are: 1, the transparent window through which we see the colored circle surrounding the pupil; 2, a quantity of water which becomes a magnifier by the shape of the skin in which it is contained; 3, the crystalline lens, which is the principal magnifier; and 4, another portion of water intersected by so many skins that it has the appearance of jelly.

*a*, Cornea or window; *b*, aqueous humor; *c*, crystalline lens, or principal magnifier; *d*, vitreous humor; *g*, optic nerve.

1. The first magnifier, which is the window of the eye, is called the cornea, and resembles a small watch-glass fitted to the outer case or white of the eye, like the glass to the watch-case.

2. The water behind the window is of the purest transparency, and as it is not intersected by skins, the enlargement or diminution of the pupil is not interrupted.

3. The crystalline lens, or principal magnifier, consists of a series of coats, placed under each other like the liths of an onion, and these are again more compactly arranged as they approach the centre. In animals which live in air, the principal magnifier resembles a common burning glass, but in fish it is either round like a pea (a sphere), a pea slightly flattened (an oblate spheroid), or a pea elongated (a prolate spheroid). This magnifier is contained in a transparent case, the edge of which passes in front of the next magnifier, leaving an unattached part between them, called the canal of Petit, for the purpose of allowing it to be moved backward and forward for proper adjustment.

4. About three fourths of the hollow globe of the eye is filled with water contained in transparent cells, which prevent the contents of the eye from running out when wounded. The fluid of the opened cells only then escapes, and the form of the eye is preserved. On a principle somewhat similar ships are constructed, divided into various compartments, one of which, only, fills when a plank is started, while the buoyancy of the vessel is preserved by the rest. From the intersections of the membranes forming the cells, the fourth magnifier resembles



Section of the Eye.



a gelatinous mass, which, from a fancied similarity to melted glass, has been called the vitreous humor. In the structure of these cells, and the sources whence they derive their nourishment, care is taken to avoid the retina; for though they are close to each other, not a single vessel passes from one to the other throughout the whole extent of the latter, with the exception of a solitary vessel that proceeds from the entrance of the optic nerve, a spot which is blind, and which does not therefore require the precautions requisite for vision. After there is no risk of interfering with the retina, the membranes forming the cells pass backward in the form of a star.

The magnifiers just described collect the light in such a manner that an image is formed on the inner layer of the retina, which is covered with extremely minute bloodvessels, branching out like the veins in a leaf after the soft part has been eaten away by insects. From the network appearance of these vessels, the whole nervous expansion has received the name of the retina. As the light proceeding from a magic lantern or through the magnifier into a dark room, would not form an image unless there was a sheet of paper or other opaque or semi-opaque substance to intercept it, so the light passing through the magnifiers of the eye must fall on a similar substance before it can form an image. This net-work, then, may be called the screen on which the image is received.

An image of the coarser vessels of the net-work, resembling a withered tree exhibited on a screen, will soon appear, if when the eye is directed steadily forward, we move a lighted candle up and down on one side of the line of vision. The vessels appear much magnified on account of the proportion of the nervous expansion they cover when compared with an ordinary image. This representation may be owing to pressure on the vessels by a swelling of the nervous fibres, produced by a violent and irregular play of light upon them; or it may be the effect of violent exercise of the colored circle round the pupil, and consequent accumulation in the neighboring vessels.

The strings of the expanded nerve are spread over the net-work, and on these again there is a layer of minute globules, retained in their place by the finest skin in the body, called the coat of Jacob.

The rays of light, after they are collected by the magnifiers, being intercepted by the net-work or screen, cause a vibration of the nervous fibres on the globules behind them, and these vibrations being communicated along the nerve, which, after joining its fellow of the opposite side, proceeds to the brain, vision is the consequence.

*a*, entrance of optic nerve. There is an opening with a yellow margin, in the centre of the retina in man, around which the ends of some of the nervous fibres meet. The probable use of this arrangement is to enable him to see very minute objects, for as sensation is most acute at the extremities of nerves, the impression from a minute object received on the ends of the fibres thus collected, will be more powerful than elsewhere; just as a stroke on the



FIGURE OF THE



end of a wire causes a greater vibration than on the middle. In order to give nourishment to these fibres, as well as to form the meshes of the net-work above described, a bloodvessel enters with the optic nerve, and in its course it avoids, by passing round it, this yellow spot, which is the most sensible part of the eye. The care which has been taken to keep the trunk at a distance is also extended to the branches, for no coarse vessel is permitted to approach this delicate structure and interfere with vision.

We sometimes see a portion of the net-work of the fibres or of the globules floating before the eyes, when they have been for some time exposed to a very bright light, as after riding, when the ground is covered with snow. The cause of the apparent motion seems to be this. As other nerves become erected, so the nervous fibres or strings become erect or tuned like a musical instrument, in order to be placed in a proper condition for distinct vision. Should there be any unusual fulness of the reticulated vessels, or any displacement or deficient energy of the strings or of the globules, the strings will not be free to vibrate by the light, but will convey false impressions, when, during their erection or tension, they come in contact with bloodvessels, nervous fibres, or globules, out of their natural order.

As the image of a grain of sand or a still smaller object must be very minute, when represented on the retina, a very slight tension of the strings would make the bodies, to which we refer, seem to pass over a great space.

One of the greatest discoveries in modern physiology, is that of Sir C. Bell, who ascertained that there are two sets of nervous fibres—one for sensation and one for motion. By the one the impressions from external objects are communicated to the brain, while the mandates of the will are conveyed from the brain by the other. Each of the organs of the senses is supplied with different nervous fibres, one set for sensation and another for adjusting the apparatus by means of which the sensation is effected. Magendie, an eminent French physiologist, found that when the adjusting nerve of the eye was cut across, the animal became as blind as when the optic nerve itself was divided.

I have noticed that pressure on one part of the retina conveys an opposite impression to the brain. If I shut my eyes and press the retina of one of them on the outside, the circle of light which is thus produced will appear as if proceeding from the inside. If I press above, the circle will seem below; and if I carry the fingers completely round the eye, the light will always be opposite to the finger. We may thus account for erect vision, although the image of objects is inverted on the retina. If with this disposition of the nerve the picture were not inverted, everything would appear upside down.

From the inverted picture on the retina, and from the facts that children miss the object at which they grasp, and that a person who has been born blind, after restoration to sight by an operation, could not at first see correctly, it was inferred that everything really appears upside down, but that the error was corrected by the sense of touch. Although it is obvious that the eyes of children are not perfect for a con-



siderable time after birth, and that eyes which have been couched are deprived of the use of the principal magnifier, it is remarkable that the opinion that we do not see correctly unless we learn to do so by experience, is still maintained by most authors on the subject. A chicken, as soon as it is hatched, without any education of the sense of sight, can pick up a seed with unerring certainty, and the sparrow and the bee fly in correct directions at the very first attempt. Although we are convinced by the sense of touch that an oar may be straight, yet when partially immersed in water it will seem crooked; and when we look at a long row of trees of equal height, the one which is most distant will appear the shortest, notwithstanding our experience to the contrary. The Divine Architect has formed every sense perfect in itself, and independent of any other.

(To be continued.)

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## BOSTON MEDICAL AND SURGICAL JOURNAL.

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BOSTON, APRIL 17, 1839.

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### THE PRACTICE OF MIDWIFERY.

A DEPLORABLE case of ignorance, violence and death, recently occurred in the city of New York, which should not go unrebuked. By the accounts in the papers it appears that Dr. Septimus Hunter was called to Mrs. Corkens, who was in labor. After removing the placenta, under the impression that something still required removal, he exerted himself for an hour, notwithstanding the lady's cries of agony, and finished his infernal task by tearing out her uterus. She died under his hands, a martyr to his empirical practice.

There are, in the city of Boston, practitioners of midwifery, who, if closely pressed, would be found as grossly ignorant of anatomy as the murderous Hunter. And it is well understood, too, that some of them are stupid igoramuses; but because their service can be had a little under the regular professional fee of those who have devoted a whole life to the acquisition of that species of knowledge which is an anchor of hope in the chamber of sickness, they have a patronage which leads to wealth, but not always to honorable distinction. We deem it of importance to regulate the practice of obstetrics, since it has become notorious that a horrible waste of life is made, of both mothers and infants, by the bold, reckless, officious daring of men and women who have not a single claim on the score of scientific attainment. Hundreds of women are hurried out of existence by these speculators on life, though the community only occasionally hear of an aggravated case. Death in childbirth is too generally considered unavoidable, and even the opinion that everything was as it should be, by way of endorsement, by a person who is entirely incompetent to decide, puts the people at rest even when they have been suddenly shocked by an unlooked-for event of this kind. A jury of ignorant should oftener be called. Cheap ignorance in physic seems to be prized in a land of civilization, while the learned are viewed with distrust and often with hatred.



**Prepared Groats.**—Whatever is of consequence to the comfort or even convenience of the sick, is also of consequence to the physician. Mr. Preston, a druggist, at No. 70 Federal street, Boston, an excellent chemist and a deserving citizen, has prepared groats for making pure gruel in the shortest time. But this is not the greatest advantage arising from the new mode of preparing the article; there is a guarantee that it is just what the envelope declares—"recommended for making a delicate, nourishing gruel, not liable to turn sour on the stomach—all crude and indigestible qualities being removed by the peculiar mode of preparation." Physicians can order it from almost any apothecary's shop throughout the country. Usually the market has been supplied from Europe with an article which becomes old, and in many instances wholly unfit for use, by the time it is carried to the bedside of patients. Mr. Preston's oatmeal has the merit of being actually good and fresh, and therefore to be relied upon at all times.

**Willoughby Medical College.**—The following account of the annual commencement of the Willoughby Medical College, in Cuyahoga Co., Ohio, is from the Cleveland Herald and Gazette.

The annual commencement of this institution was held at the College on the 25th of February, and the degree of Doctor of Medicine was conferred on the following gentlemen. Their inaugural dissertations are annexed.

W. H. Fox, of Cuyahoga Co., Ohio, on *Cold and Tepid Bathing*; J. W. Henderson, of Cuyahoga Co., Ohio, on *Anatomical Education*; A. McFarland, of Cuyahoga Co., Ohio, on *Purgatives*; J. A. Sayles, of Cuyahoga Co., Ohio, on *Dysentery*; J. M. Johnson, of Geauga Co., Ohio, on *Aspidum Acrosticoides*; W. S. Streeter, of Portage Co., Ohio, on *Cause and Effect*; Henry Spellman, of Medina Co., Ohio, on *Hepatica acuta*; Ellsworth Rose, of Erie Co., N. Y., on *Cynanche Trachealis*.

After the reading of the theses by the candidates, and the conferring the degrees, with the presenting of the diploma by the President of the institution, Professor Delamater addressed the graduates in an able, eloquent and appropriate manner. While he depicted in an impressive form the highly responsible duties of the profession they had embraced, with the many opportunities which presented themselves of doing good in the practice of their avocation; he also held up to their view a strong picture of the hostile and uncourteous conduct of practitioners towards each other, as being one of the main props of empiricism; at the same time advising them against such an illiberal course. He also urged, in a mild and affectionate manner, the necessity of their being followers of Him who spoke as never man spoke, and following out his noble example of ameliorating the condition of the distressed, and soothing pain and woe wherever it existed; while he hoped, by their strict moral intercourse with mankind, they might raise the standard of the medical profession to that elevation which it so justly merits.

The medical profession of this section of country will very soon feel the beneficial influence of this school in the advancement of medical literature. The high literary and scientific acquirements of the present faculty, together with their lofty-toned sentiments of virtue and morality, entitle them to any assistance which an enlightened community can render in establishing a medical school in our vicinity.

**Medical Miscellany.**—At Newburn, N. C., where the varioloid has been prevailing, there has been one death only.—Maryland has enacted a law



by which the steamers may collect pay for their services.—Dr. Southwood Smith, of Southampton, England, has completely embalmed the body of the celebrated Jeremy Bentham, who bequeathed his body to Dr. Smith for that purpose.—In 1818 a mad dog was necessarily slain in the chamber of a house in the Shaker village, near Pittsfield, Mass. About a quart of blood, for security, was buried at the foot of a pear tree, in full bloom, which immediately began to wither. Some of the small roots were supposed to have been wounded, and the poison carried into the circulation of the tree.—The catalogue of the medical department of the University of Pennsylvania, contains 202 names.—Maryland, by an act of the legislature, has appropriated \$40,000 for the endowment of a lunatic asylum.—Dr. Christison's treatise on granular regeneration of the kidneys, and its connection with dropsy, inflammation and other diseases, is in process of publication in the American Medical Library.—Dr. Morton's great work on American skulls may be expected soon.—A physician is to be elected in June, for the city institutions at South Boston.—M. Bulard, the experimenter on the plague, has invited a congress of physicians from all countries, to assemble at Malta, to agree upon a universal system of quarantine. We are translating his bulletin.—The process for embalming dead bodies or parts of animals, by the injection of a liquor, in England, is considered a great and important discovery.—Dr. Toothaker's tooth instrument is getting into favor; it is a capital instrument, and cheap, too. It may be found at Brewer's, No. 92 Washington street.—Scarlet fever is mortally prevalent, as usual, in many places, south and west.

## REGISTER OF THE WEATHER,

Kept at the State Lunatic Hospital, Worcester, Ms. Lat. 42° 15' 49". Elevation 483 ft.

1859. March.	THERM.			BAROMETER.			Wind, S. P.M.	Weather, S. P.M.	Remarks.
	h.	a.	m.	h.	a.	m.			
1. Frid.	35	36	36	29.75	29.60	29.14	NW	Clear	High wind.
2 Satur.	38	49	46	29.11	29.04	29.00	S	Flying Clouds	Warm and pleasant.
3 Sun.	34	16	16	29.03	29.16	29.20	N	Squally	
4 Mon.	6	29	23	29.59	29.59	29.58	NW	Clear	
5 Tues.	15	29	28	29.59	29.45	29.46	SW	Clear	Aurora borealis.
6 Wed.	23	41	40	29.60	29.59	29.55	SW	Clear	
7 Thurs.	28	50	51	29.59	29.59	29.55	SW	Clear	Warm and pleasant.
8 Frid.	34	50	45	29.19	29.57	29.55	SE	Cloudy	Evening, rain and snow.
9 Satur.	36	40	39	29.66	29.76	29.55	SW	Clear	
10 Sun.	29	39	31	29.90	29.04	29.16	NW	Clear	
11 Mon.	19	39	34	29.90	29.36	29.43	NW	Clear	
12 Tues.	24	45	43	29.59	29.65	29.70	NW	Clear	
13 Wed.	30	40	46	29.90	29.79	29.68	SE	Clear	At night, rain and high wind.
14 Thurs.	41	41	38	29.90	29.33	29.40	SW	Cloudy	
15 Frid.	30	37	40	29.53	29.56	29.60	NW	Clear	Aurora borealis.
16 Satur.	30	44	45	29.54	29.46	29.45	SW	Clear	
17 Sun.	26	45	44	29.56	29.53	29.49	NW	Clear	
18 Mon.	27	41	40	29.46	29.34	29.29	NE	Rain	
19 Tues.	34	39	39	29.16	29.29	29.43	NE	Cloudy	Snow squalls.
20 Wed.	27	38	51	29.59	29.63	29.59	NE	Cloudy	
21 Thurs.	38	55	54	29.47	29.25	29.30	NE	Rain	In the night, thunder and lightning.
22 Frid.	24	44	43	29.10	29.10	29.11	NW	Clear	
23 Satur.	36	49	46	29.50	29.50	29.50	NW	Clear	
24 Sun.	32	41	43	29.13	29.29	29.50	NW	Clear	
25 Mon.	34	43	37	29.50	29.30	29.34	NW	Clear	Aurora borealis.
26 Tues.	37	44	40	29.81	29.30	29.33	NW	Clear	Morning, snow squalls.
27 Wed.	43	64	54	29.60	29.60	29.14	SW	Clear	
28 Thurs.	40	60	49	29.30	29.44	29.44	S	Clear	
29 Frid.	30	40	40	29.21	29.23	29.16	NE	Clear	Rain in the night.
30 Satur.	30	40	40	29.21	29.23	29.16	NE	Clear	
31 Sun.	30	40	40	29.21	29.23	29.16	NE	Clear	

March has been a mild and pleasant month, having much clear weather, few storms, and some of great severity. The extremes of the thermometer have been 6, and 69; of the barometer, 29.02, and 29.92. Very little rain has fallen.



**TO CORRESPONDENTS.**—A number of communications are crowded out of this number. Among them are the following: On the use of Fowler's Solution in Scarlatina; New Method of filling decayed Teeth; Orthopedic Institution; Medical Inquiries: Eryth in Parturition; Scarlet Fever; and Case of Tetanus.

DICK, —In Kingston, N. J., George Bayles, M.D., 32.—In St. Croix, Philemon Baker, M.D., Assistant Surgeon in the U. S. Navy, 24.

Whole number of deaths in Boston for the week ending April 13, 37. Males, 24—females, 12.

Of consumption, 6—worms, 2—hooping cough, 1—convulsions, 1—wounds, 2—drowned, 2—debility, 1—inflammation of the lungs, 2—apoplexy, 1—marasmus, 1—old age, 1—disease of the brain, 1—scarlet fever, 3—croup, 1—child-bed, 1—dropsy on the brain, 1—liver complaint, 1—dropsy, 1—lung fever, 1—infantile, 1—cachexia, 1—inflammation of the stomach, 1—stillborn, 7.

## OUTLINES OF THE INSTITUTES OF MEDICINE.

**FOCUS** on the Philosophy of the Human Economy in Health and in Disease, in 3 Parts. By Joseph A. Gallup, M.D., author of *Sketches of Epidemic Diseases in the State of Vermont*, late Professor of Theory and Practice in the Vermont Academy of Medicine, and of the Clinical School of Medicine, &c., president of the Vermont Medical Society, Hon. Member of the Medical Society of the State of New York, &c. 2 vols. 8vo., pp. 676.

"As the writer has been chiefly induced to undertake the labor of the above work, in consequence of two very courteous memorials addressed to him from all the students present of two classes at different medical institutions, requesting a publication of his lectures, or the principles embraced in them, he has presumed, with respectful regards, to present these outlines to the Students of Medicine in the United States, with a hope of their being in some measure useful to the Science of Medicine."

*Extrait of a Letter from Professor J. W. Francis, M.D.*—“Having read the manuscript of *Bei Gallen*, on the Institutes of Medicine, I am free to remark, that it is the result of great research, and long and extensive medical experience. The author, while occupied as an observer, has recorded his impressions, with the praiseworthy design of adding to the stock of sound practical information. His book will be read for the originality and excellence of many of his views, and the masculine development of the writer's reflections. It will deserve and find a place in the library of the student, and be often consulted by the medical practitioner with advantage.

"New York, 1838."

Just published by OTIS, BROADERS & CO., 120 Washington street, Boston.

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### BROWN'S PATENT SELF-INJECTING APPARATUS.

This undersigned respectfully calls the attention of medical practitioners to a newly-invented instrument, which is for sale at his store, No. 481 Washington street, corner of Elliot street. If physicians would examine the principles of its construction, they would appreciate its usefulness, and would probably be induced to recommend it very generally in their practice. Physicians, druggists, and the inhabitants of Boston, are particularly invited to look into the superiority of this article over the inventor's former instrument, as it is not to the advantage of Goodyear's new India Rubber, which is allowed by all to be an entirely different article from that formerly manufactured.

Feb. 6—only

**WILLIAM BROWN.**

### PRIVATE MEDICAL INSTRUCTION.

Two subscribers are associated for the purpose of giving a course of medical instruction. Their pupils will have regular access to the medical and surgical practice of the Massachusetts General Hospital. They will be admitted, also, to the practice of the House of Correction, which constantly presents a large number of important cases, and where opportunities will be afforded for acquiring a practical knowledge of compounding and dispensing medicines. They will be furnished with opportunities for the study of Practical Anatomy, not inferior to any in the country. To the pupils, particularly to those in the last year of their professional studies, facilities will be afforded for acquiring a personal acquaintance with the practice of medicine and osteopathic practice. Instruction by attendance at the lectures will give in the different branches of medical science, and the students will be enabled to attend the public lectures of the University. Books, and a room with fire and lights, will be furnished to the students at the expense of the instructors.

GEORGE C. SHATTUCK.

GEORGE C. SHATTUCK  
WALTER CHANNING  
JOHN WARR  
GEORGE W. OTT  
WINNLOW LEWIS

Oct 31—eptf

## SITUATION

**A YOUNG PHYSICIAN**, in a town about 18 miles from Worcester, wishes to sell from five to three hundred dollars worth of personal property, consisting of a horse, pig, medicine, &c.; and emigrate. Town contains about 3000 inhabitants—two religious societies, and good schools through the year. A letter to the editor of the Journal, post-paid, will direct to the town and physician, or whom circumstances and any particulars may be obtained.

M. S.—11/10/90.

M 6-41200

## TO PHYSICIANS.

A PHYSICIAN wishing a stand, where he may command a large business, may hear of one by application to the editor of the Medical Journal; if by letter, post paid. M. 27-65

ME 57-5

[illegible]